



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|--------------------------|------------------|
| 10/076,513 | 02/19/2002 | Takahisa Miyamoto | ASA-1065 | 3429 |
| 7590 12/27/2005 Mattingly, Stanger & Malur, P.C. 1800 Diagonal Road, Suite 370 Alexandria, VA 22314 | | | EXAMINER WONG, WARNER | |
| | | | ART UNIT 2668 | PAPER NUMBER |

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/076,513 | Applicant(s) MIYAMOTO ET AL. | |
| | Examiner Warner Wong | Art Unit 2668 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu (6,757,291) in view of Ghani (6,160,793) and Le (6,680,955).

Regarding claims 1 and 10, Hu describes a system connected between a first (fig. 1, SAN #110) and second (fig. 1, Network #130) networks of different types of communication lines (col. 7, lines 57-60, example where network uses Ethernet and Storage uses SCSI), and performs a packet relay between the first and second networks/communication lines, comprising:

a first port connected to the first network/communication line for receiving a first packet from the first network/communication line (fig. 3, #350, SCSI interface for receiving storage data);

a second port connected to the second network/communication line for sending a second packet to the second network/communication line (fig. 3, #310, Ethernet interface for sending packets);

a receiving section including a memory section (fig. 2, buffer #215);

a sending section (fig. 3, #320) connected to said second port (fig. 3, #310) and the receiving section (fig. 3 #350-351), where the sending section receives said first

Art Unit: 2668

packet output from said receiving section, converting said first packet to said second packet, and outputting the second packet to the second port (col. 8, 17-24 and col. 9, lines 8-11).

Hu lacks what Ghani describes:

a receiving section (fig. 9, program #930 & #912) connected to the first port (fig. 9, receive port #942), where it includes a memory section (fig. 9, #912) storing at least one first header (fig. 7, IPv6 header #704) with being associated with packet identification information (fig. 7, destination address, #714) (fig. 6 & 7 and col. 7, lines 60-66, where in converting [i.e. segmenting] each IPv6 packet to ATM cells, the process retains [i.e. stores] the received IPv6 header to be used by all ATM cell payloads corresponding to a segmented IP payload as similarly portrayed in applicant's drawing fig. 23, #2407 & #2408).

It would have been obvious to one with ordinary skills in the art at the time of invention to store the IP header so that it may be deployed in every segmented packet (ATM cell payload) as per Ghani in the receiving section of Hu. The motivation being that such approach may "enhancing the performance of IP data traffic over ATM without requiring packet-reconstruction at the ATM layer", where the ATM layer may be any lower layers such as the Ethernet layer.

Hu and Ghani combined lack what Le describes:

determining whether the first packet includes the first header, and when the first header is not included, reading out from said memory section a first header which is stored with being associated with a packet identification information having a same

Art Unit: 2668

value as for the packet identification information included in the first packet (fig. 8, #824 where headers are regenerated for packets after initialization phase which are sent without headers; fig. 11, where the sent packets #504 sent to the receiving side #822 have their headers stripped after initialization phase #500 & #502, and col. 3, lines 25-37, where the receiving section [header regenerator] was provided the header info during initialization phase and after the initialization phase regenerates [i.e. read out] the header to be added to the determined header-less packets corresponding to the same connection/call [i.e. packet identification information] of the terminal in fig. 1, #130).

It would have been obvious to one with ordinary skills in the art at the time of invention by applicant to incorporate the header stripping method of Le into the method of Hu and Ghani. The motivation being that it provides a way to compress/eliminate the header overhead in transmission which wastes transmission bandwidth (Le, col. 1, lines 31-34).

Regarding claims 2 and 11, Hu, Ghani and Le combined describe all limitations set forth in claim 1. Ghani further describes:

when the first packet includes said first header (fig. 7, ipv6 header #704), said receiving section stores the packet identification information (fig. 7, destination address, #714), which is included in said first packet, after being associated with said first header, and outputs said first packet (Ghani, fig. 6 & 7 and col. 7, lines 60-66, where in converting [i.e. segmenting] each IPv6 packet to ATM cells, the process retains [i.e. stores] the received IPv6 header to be used by all ATM cell payloads corresponding to a

Art Unit: 2668

segmented IP payload as similarly portrayed in applicant's drawing fig. 23, #2407 & #2408).

Regarding claims 3 and 12, Hu, Ghani and Le combined describe all limitations set forth in claims 1 and 10 respectively. Hu, Ghani and Le further describe:

said receiving section (Ghani, fig. 9, program #930 & #912) determines whether a packet length of said first packet to which said first header is added is greater than a value of a maximum packet length (ATM fixed cell size) defined for said second network/communication line, and when the packet length of said first packet is greater than the value of said maximum packet lengthy divides said first packet to two or more third packets (ATM cell payloads) to output the third packets (Ghani, fig. 6, where a IPv6 packet is segmented to multiple ATM cell payloads);

each of said third packets (Ghani, fig. 7, #702) includes said first header (Ghani, fig. 7, #704), and a part of data included in said first packet (Ghani, fig. 7, #712).

Regarding claims 4 and 13, Hu, Ghani and Le combined describe all limitations set forth in claims 3 and 12 respectively. Hu further describes:

the sending section (fig. 3, #310, #320, #321 & #322) receives two or more said third packets output from said receiving section (fig. 3 #350 & #351), converts said third packets to said second packets (fig. 3 #320), and outputs said second packets to said second port (fig. 3, #310) (col. 8, lines 17-24).

Regarding claims 5 and 14, Hu, Ghani and Le combined describe all limitations set forth in claims 1 and 10 respectively. Ghani further describes:

Art Unit: 2668

the receiving section identifies sequence information included in said first packet, to determine whether if it is a packet is without header (use of Ghani, col. 7, lines 27-30, where packet delimiter flag to indicated if cell represents the first cell of a new IP packet, to the method of Le where packets received by header regeneration #822 after initialization phase are headerless as depicted in fig. 11 and col. 3, lines 25-27).

3. Claims 6-9 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu, in view of Ghani and Le as applied to claims 1 and 10 above respectively, and further in view of Odenwald (6,310,884) and TechFest ("Ethernet Frame Structure" website).

Regarding claim 6 and 15, Hu, Ghani and Le combined further describes:

a format of said first packet differs from a format of said second packet (Hu, col. 7, lines 43-47 and 58-60, first packet may be in Ethernet format & second packet may be in Fiber Channel formats);

said first (Fiber Channel FC) packet inherently has second FC header (it is inherent that a FC packet has a FC header so that the packet may be routed accordingly).

said second (Ethernet) packet inherently has a third (Ethernet) header (it is inherent that a Ethernet packet has a Ethernet header so that the packet may be routed accordingly);

Hu, Ghani and Le combined lack the Fiber Channel format description from Odenwald:

Art Unit: 2668

the Fiber Channel header includes said packet identification information (destination ID) and address information of said first network/communication line (source ID) (fig. 3, D_ID #44 and S_ID #48);

It would have been obvious to one with ordinary skills in the art at the time of invention for Hu and Ghani to specify the format/contents of a fiber channel (FC) header. The motivation being that in using a standardized fiber channel header, the apparatus may be compatible with may other vendors supporting the FC format.

Hu, Ghani, Le and Odenwald lack the Ethernet format description from TechFest: the Ethernet header including address information of said second network (p. 1, destination MAC Address).

It would have been obvious to one with ordinary skills in the art at the time of invention for the combined apparatus of Hu, Ghani and Odenwald to specify the format/contents of an Ethernet header. The motivation being that in using a standardized Ethernet header, the apparatus may be compatible with may other vendors supporting the Ethernet format.

Regarding claims 7 and 16, Hu, Ghani, Le, Odenwald and TechFest combined describe all limitations set forth in claim 6. Hu further describes:

said sending section generates said third header, and adds said generated third header to said first packet to convert said first packet to said second packet (Hu, col. 8, lines 17-24, where the first packet from SAN, which may be of fiber channel format [Hu, col. 7, 44-46], is converted to second [Ethernet] packet format by inherently inserting a

Art Unit: 2668

Ethernet header before transmitting at the Ethernet interface [inherent that a Ethernet packet has a Ethernet header so that the packet may be routed accordingly].)

Regarding claim 8 and 17, Hu, Ghani, Le, Odenwald and TechFest combined describe all limitations set forth in claim 6 & 15. Hu, further describes:

the receiving section (fig. 3, #350 & #351) removes said second header from said first packet to outputs said first packet (col. 9, lines 8-11).

Regarding claim 9, Hu, Ghani, Le, Odenwald and TechFest combined describe all limitations set forth in claim 6. Hu and Ghani combined further describe:

the first network is a SAN (Hu, fig. 1, SAN #110)

the second network is a LAN (Hu, fig. 1, network #130);

the first header is an IP header (Ghani, fig. 7, Ipv6 header #704);

Regarding claim 18, Hu, Ghani, Le, Odenwald and TechFest combined describe all limitations set forth in claim 15. Hu and Ghani combined further describe:

the first communication line is a Fibre Channel line (Hu, fig. 2, #250 and col. 7, lines 44-46, communication line at the SAN interface may be fiber channel)

the second communication line is an Ethernet line (Hu, fig. 2, #220 and fig. 3, #310, communication line at the Network interface may be Ethernet)

the first header is an IP header (Ghani, fig. 7, Ipv6 header #704);

the second header is an Ethernet header (Hu, fig. 3, #320, where Ethernet header is added to payload);

and the third header is an FC header (Hu, fig. 2, #250 and col. 7, lines 44-46, where fiber channel frames inherently comprises a FC header).

4. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hu in view of Ghani and Le.

Regarding claim 19, Hu describes a system connected between a SAN and a LAN (fig. 1, system in dotted lines), and relays a packet, which is sent from a device connected to the SAN, to a device connected to the LAN, comprising:

a first port connected to said SAN for receiving a first packet from said SAN (fig. 3 #350);

a second port connected to said LAN for sending a second packet to said LAN (fig. 3, #310), said second packet having a format different from a format of said first packet; and

a SAN process section connected to said first port for receiving said first packet received at said first port to outputting said first packet (fig. #350 & #351);

wherein said SAN process section, comprising:

a memory section (fig. 2, buffer #215, also depicted as fig. 3 buffer #301);

a LAN process section (fig. 3, #320) connected to said second port and said SAN process section (fig. 3, #351), said LAN process section receiving said first packet output from said SAN process section, including a conversion section (fig. 2, #221) for converting said first packet to said second packet, and outputting said second packet to said second port (col. 8, 17-24 and col. 9, lines 8-11).

Hu lack what Ghani describes:

an identification section (process) for identifying whether said first packet (segmented ATM cell payload) includes an IP header (process described in col. 7, lines 27-30, where packet delimiter flag is used to indicated if cell represents the first cell of a new IP packet which will have IP header.)

a storing section for storing in the memory section (fig. 9, #912) the incoming first packets (fig. 7, destination address, #714) with the associated packet identification information in the IP header (fig. 7, IPv6 header #704) (fig. 6 & 7 and col. 7, lines 60-66, where in converting [i.e. segmenting] each IPv6 packet to ATM cells, the process retains [i.e. stores] the received IPv6 header to be used by all ATM cell payloads corresponding to a segmented IP payload as similarly portrayed in applicant's drawing fig. 23, #2407 & #2408).

It would have been obvious to one with ordinary skills in the art at the time of invention to store the IP header so that it may be deployed in every segmented packet (ATM cell payload) as per Ghani in the receiving section of Hu. The motivation being that such approach may "enhancing the performance of IP data traffic over ATM without requiring packet-reconstruction at the ATM layer", where the ATM layer may be any lower layers such as the Ethernet layer.

Hu and Ghani combined lack what Le describes:

a header adding section (process) for reading out, when said first packet (packet received after initialization phase) does not include said IP header, from said memory section said IP header, which is stored with being associated with packet identification information (destination address) among said IP headers stored in said memory section

Art Unit: 2668

to add said IP header to said first packet (fig. 8, #824 where headers are regenerated [read from storage] for packets after initialization phase which are sent without headers; fig. 11, where the sent packets #504 sent to the receiving side #822 have their headers stripped after initialization phase #500 & #502, and col. 3, lines 25-37, where the receiving section [header regenerator] was provided the header info during initialization phase and after the initialization phase regenerates [i.e. read out] the header corresponding to the same connection/call [i.e. packet identification information] of the terminal in fig. 1, #130).

It would have been obvious to one with ordinary skills in the art at the time of invention by applicant to incorporate the header stripping method of Le into the method of Hu and Ghani. The motivation being that it provides a way to compress/eliminate the header overhead in transmission which wastes transmission bandwidth (Le, col. 1, lines 31-34).

Hu, Ghani and Le lack the Fiber Channel format description from Odenwald:

the first packet includes the packet identification information (destination ID) (fig. 3, D_ID #44 and S_ID #48, where the first packet is a fiber channel packet with a header which includes the destination ID);

It would have been obvious to one with ordinary skills in the art at the time of invention for the combined apparatus of Hu, Ghani and Le to specify the format/contents of a fiber channel (FC) header which includes the packet identification information. The motivation being that in using a standardized (FC) header, the apparatus may be compatible with may other vendors supporting the FC format.

Regarding claim 20, Hu, Ghani, Le and Odenwald combined describes all limitations set forth in claim 19. Hu, Ghani Le and Odenwald further describe:

the SAN process/section (Hu, fig. 3, #350 & #351) further comprises a dividing section (process) for determining whether a packet length of said first packet to which the first header is added is greater than a value of a maximum packet length defined for said second network, and for dividing, when the packet length of said first packet is greater than the value of said maximum packet length (fixed ATM cell size), said first packet to two or more third packets (cell payloads) to output said third packets (Ghani, fig. 6 and col. 7, lines 15-16, where a IPv6 packet is segmented to multiple ATM cell payloads);

the conversion section of said LAN process section receives two or more said third packets (Ghani, fig. 6 & 7, ATM cell payloads) output from said SAN process section, and converts said third packets to said second packets (Ghani, fig. 6 & 7, ATM cells with ATM cell headers, where outgoing ATM cell format may be replaced by the outgoing Ethernet format).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Hu (6,535,518), Latif (6,400,730), Kohda (6,839,872), and Anderson (2005/0078704).

Art Unit: 2668

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Warner Wong whose telephone number is 571-272-8197. The examiner can normally be reached on 5:30AM - 2:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Warner Wong
Examiner
Art Unit 2668

NW



CHIEH M. FAN
SUPERVISORY PATENT EXAMINER